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ARCHITECTURAL ALUMINIUM SYSTEMS

Jig and Tooling Guide

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Section

1

Pneumatic Press PO316

Technical Features

- Power ⇨ 3 tons.
- Dimensions without table ⇨ 290 x 310 x 310mm.
- Weight ⇨ 16kgs.
- Stroke ⇨ 16mm
- Diameter of Piston ⇨ 40mm
- Working Pressure ⇨ 6~ 8 bars.
- Air Consumption ⇨ 1.2 litres/cycle

Special Support Table

Technical Features

- Dimensions without press ⇨ 370 x 1020~1820 x 800~1040mm.
- Dimensions with press ⇨ 370 x 370 (exc. support) x 1110mm.
- Weight ⇨ 15kgs.
- Water Filter.
- Oil/Air lubrication & Pressure Regulator. (R.L.F)
- Air Sprayer (Trigger Operated)

Oil Specification for lubricating press: Viscosity; 36.8~40°. Index; 156.
Recommended Oil CPOAC Ref. Oléoflux.

Section

2

Setting Up

Bringing into Service

1) Bolt down the Press to the special table with the bolts provided or secure to a suitable bench with adequate fixings.
2) Connect the R.L.F to the air network. If fitting the press without the Special Table ensure the air supply carries oil lubrication and has the facility to be pressure regulated.
3) Adjust the pressure regulator, by turning the valve, to achieve a pressure of approximately 7 bars.
4) Before fitting a punch tool push in the button switch fitted to the side of the press, hold in for 2 seconds and release. Operate the press a few times without a punch tool fitted to ensure the press is operating correctly.
5) Before proceeding any further, read the section on punching profile.

Important Note. For safety reasons the collar must always be removed before any work of cleaning of the tool is carried out. It is recommended that the air supply is also disconnected.

Maintenance

Regular Inspection

Every 20~30 operations the following operations must be carried out.

1) Check stations for waste metal and remove with air gun.
2) Lubricate cutting faces and tool posts with recommended spray lubricant.

Weekly Checks

Every week the following operations must be carried out.

1) Check connections and air hoses for any air leakage.
2) Check fixing bolts and re-tighten if loose.
3) Bleed the water filter cartridge and clean if necessary.
4) Check the oil level in the lubricator and top up if necessary.

6 Monthly Maintenance

1) Every 6 months or sooner if the tool is being used continuosly the following operations must be carried out.
2) All operations as carried out in the weekly schedule.
3) Remove punch and die set and remove build-up of aluminium using a soft wire brush.

Section

3

Punching profile ready for fabrication

Door Profile Punch Tool – Com7-Tool4

Station 1 – Rail cleat fixing hole

To punch the 9mm Ø hole in the stile, first determine the location of the hole depending on rail and cleat to be fixed. The correct stop should be selected as shown in Fig. 1.

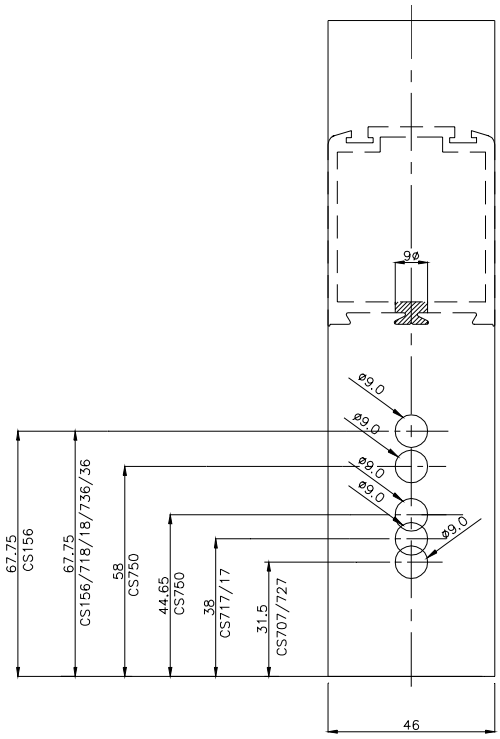


Fig. 1. Hole positions using end stops.

Examples.

If you require a hole for CS17 or CS717 lift the first stop (120) to expose the second stop (119).

If you require a hole for CS18 or CS718 lift all of the stops (120 through to 117) and use the back stop as your guide.

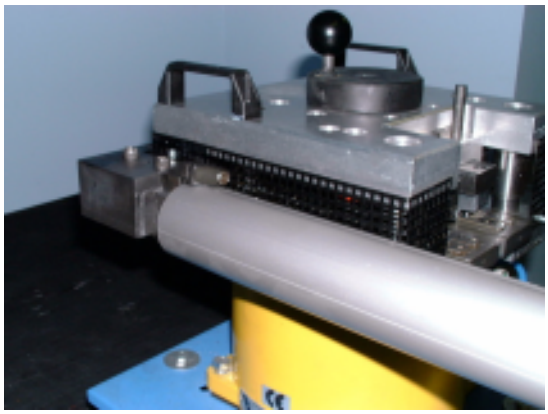


Plate 1. Engage the dovetails into the punch tool, up to the pre-determined stop.

Once the correct stop is in position, insert the door stile into the punch tool as shown in Plate 1. Depress the operating button until the profile has been punched, release the button and withdraw the door stile from the punch tool.

Station 3 – Stile, removing the gate (part 1)

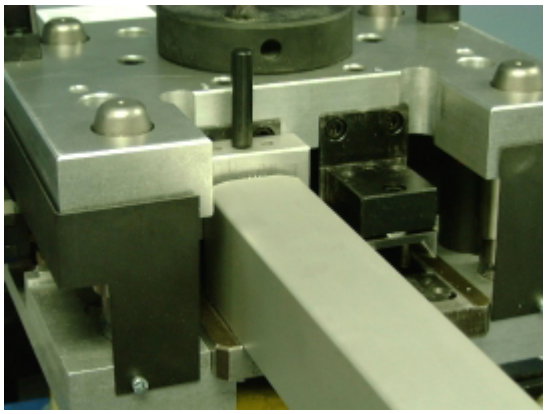


Plate 2. Insert the profile into the tool as far as possible.

Removing this gate creates many stresses and for this reason the profile must be punched a number of times and in strict sequence. Failing to follow the correct sequence will result in distorted profile and, more seriously, parts of the tool will break.

For the 20.5mm deep cutout the profile must be punched in the following stages.

- Position the removeable stop (182228) onto station 3.
- Insert the profile as far as possible, with the dovetails located within the die set, Note it will not reach the stop at this stage. (see plate 2)
- Operate the punch tool. A centre portion has now been removed which allows the profile to be pushed up to the stop.
- Operate the punch tool again. The cutout is now 20.5mm deep. The profile should then be transferred to station 4 for punching to the correct width.

For the 42mm deep cutout the profile must be punched in the following stages.

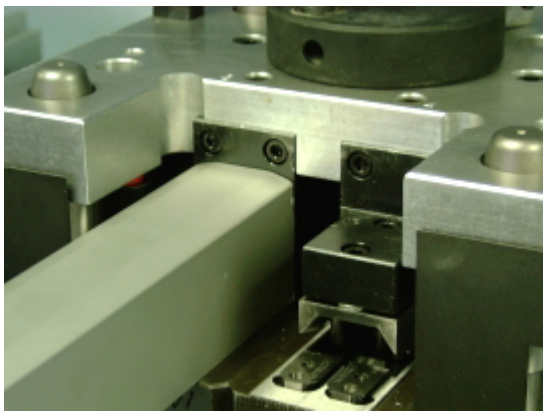


Plate 3. After 3 operations the centre of the gate is removed to a depth of 42mm.

- Remove the stop (182228) from the tool.
- Insert the profile as far as possible, with the dovetails located within the die set.
- Operate the punch tool. A centre portion has now been removed which allows the profile to be pushed up further.
- Operate the punch tool again and slide the profile further into the tool.
- Finally push the profile up to the back stop for the final centre punch operation (see plate 3).
- Operate the punch tool again. The cutout is now 42mm deep. The profile should the be transferred to station 4.

Station 4 – Stile, removing the gate (part 2)

For the 20.5mm deep cutout the profile must be punched in the following stages.

- Ensure the centre portion is fully removed as explained under the heading ‘station 3’
- Position the removeable stop onto station 4.
- Insert the profile as far as possible, with the dovetails located within the die set, Note it will not

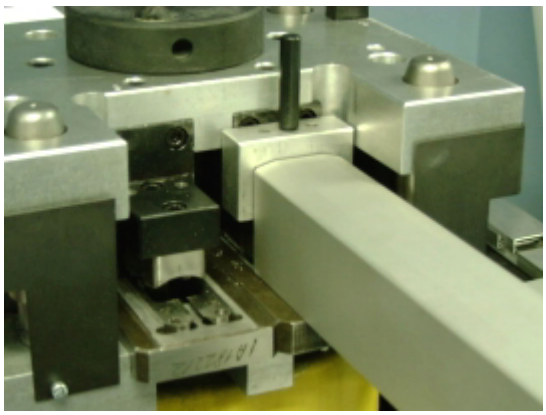


Plate. 4 Insert the pre-punched profile into the tool up to the stop

reach the stop at this stage.

- Operate the punch tool. A portion has now been removed 40mm wide which allows the profile to be pushed up to the stop (see plate 4).
- Operate the punch tool again. The cutout is now 20.5mm deep x 40mm wide.

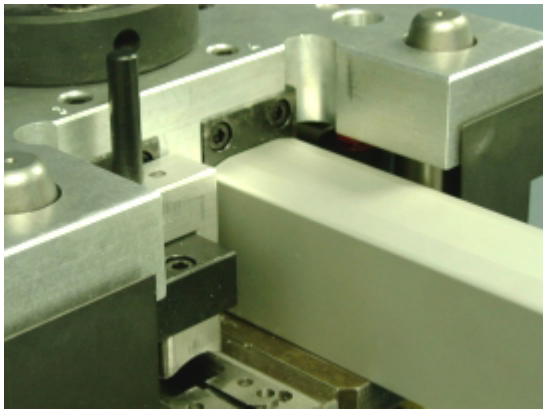


Plate. 5 Insert the pre-punched profile into the tool.

For the 42mm deep cutout the profile must be punched in the following stages.

- Ensure the centre portion is fully removed as explained under the heading 'station 3'
- Remove the stop from station 4 and place it on station 3.
- Insert the profile as far as possible, with the dovetails located within the die set, Operate the punch tool.
- Push the profile into the tool 2 more times punching at each stage (see plate 5).
- The profile has now had a gate removed 40mm wide x 42mm deep. Remove the profile from the tool.

Station 2 – Rail, welding holes

When fabricating doors using welded construction, holes may be punched for 'puddle welding' the rails.

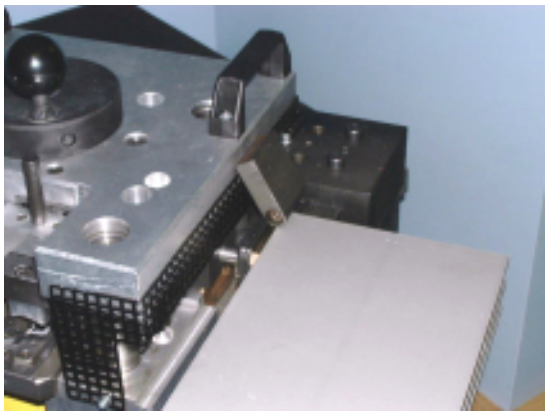
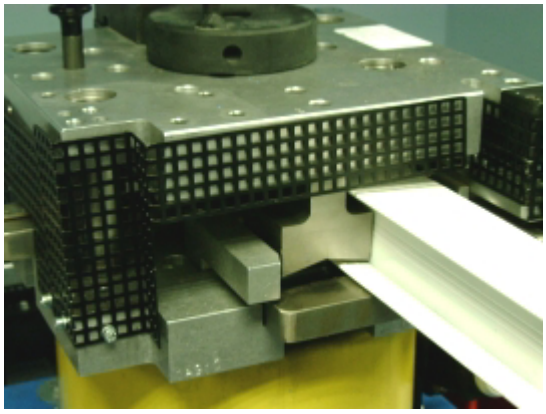


Plate. 6. Slide rails between dies (107 and 108).

Slide rail onto the punch tool with the face to be puched towards the tool. Ensure the centre dovetail locates correctly into part (108). With the stop (121) in the raised position the profile is entered into the punch tool until it makes contact with the back stop (see plate. 6). This will be correct for a 12mm Ø hole at a centre 30.5mm in from the end of the profile. By dropping the stop down and the profile pushed up against the stop the punched hole will be 9.5mm in from the end of the profile. **Note; When punching bottom rails that are to fitted with bottom pivots it is recommended only the hole at 30.5mm centres is punched as the 1st end hole will interfere with the pivot fixing hole.**

When the door rail is correctly located depress the operating button until the profile has been punched, release the button and withdraw the door rail from the punch tool.

Station 1 & 2 – Rail cut-out, access for side load top arm



For the 45.5mm x 16mm cut out (side load arm application) first determine the hand. If the cutout is required to the left hand end of the top rail insert profile into station 1 and for the right hand end station 2. See Plate 7 showing CS17 top rail inserted into station 1.

Plate. 7 Removing top rail cutout for side load arm (Left hand shown).

Station 3 – Rails, holes for taper pins

To punch 4mm Ø holes in the rail determine whether the rail is for use in a fixed sash or door construction. For sash rails load the profile into the punch tool against the pin stop, (Plate 8a).

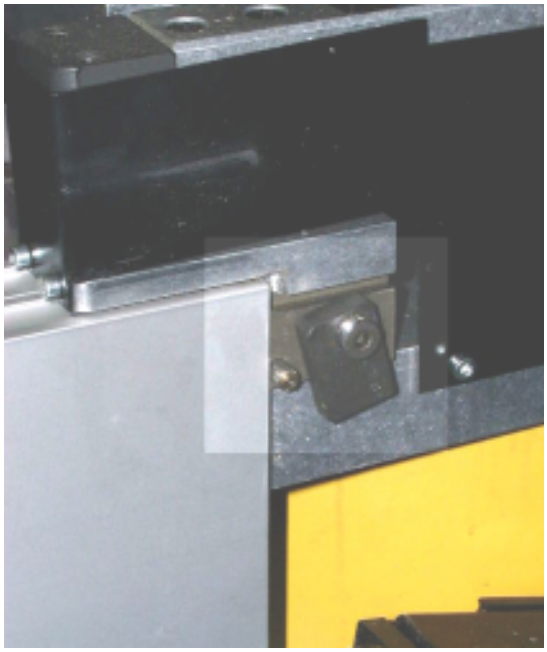


Plate 7a.
Sash rail stop position

Plate 7b.
Door rail stop position

Plate 7. Fixing holes for door or sash rails.

For door rails turn the stop (181617) anticlockwise and push the profile up to the stop (Plate 8b).

Once the profile is correctly located depress the operating button until the the profile has been punched. Remove the rail from the punch tool and re-insert to punch 2 holes to the reverse side.

Station 5 – Bottom rail, fixing holes for bottom pivot

When preparing for the bottom pivot shoe raise or drop the end stop (181617) subject to the door type, i.e if the door is to be finger guard type using round door stiles, the stop should be dropped

Plate 9. Punching rail to accept bottom pivot – 70mm pivot point for 55mm stile shown.

down and the rail inserted. If the door is using standard 55mm stiles the stop should be lifted, (see plate 9). Once the profile is correctly located, firmly against the stop, depress the operating button and hold down until the profile has been punched. When punch completed release button and withdraw the profile. The 2 holes can now be tapped for M6. The final fixing hole for the pivot should be drilled on site once final adjustment of the door has been carried out.

Station 4 – Brush/woolpile carrier, access hole

Plate 10. Insert brush carrier face down locating the dovetail.

Brush carrier CS100 can be punched in 2 positions for either pivot access or locking rod clearance hole. Insert the profile, face down, engaging the dovetail with the die on the tool. (see plate 10) With the stop pushed down and the profile inserted into the punch tool the profile will be punched at 16mm centres to the end of the profile and with the stop lifted, 59mm centres to the end.

Door Profile Punch Tool – Com7-Tool1

Station 2 & 3 – Round finger guard stile, access for side load top arm

For a 50mm long x 16mm deep cutout use stations 2 or 3 according to hand. With the gate already removed on Tool 4 the profile can be inserted into the punch tool. For a door hung on the right (viewed from inside) insert profile into station 2 (see plate 11). For a door hung on the left insert profile into station 3. Once the profile is correctly located, firmly against the stop, depress the operating button and hold down until the profile has been punched. When punch completed, release button and withdraw the profile. The top arm name plate will be later dressed around the round profile and secured with 2 No. screws concealing this cutout.

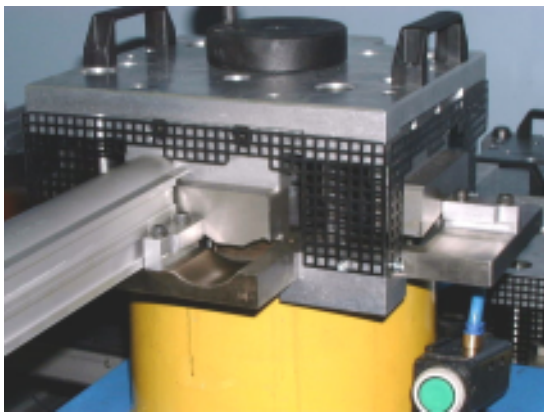


Plate 11. Round door stile cutout for right hand door, station2.

Station 4 & 5 – Single action finger guard stile, access for side load top arm

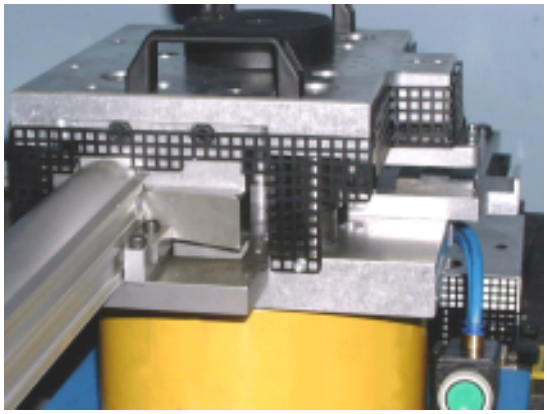


Plate 12. Single action door stile cutout for right hasnd door, station4.

With the gate already removed on Tool 4 the profile can be inserted into the punch tool. for a door hung on the right (viewed from inside) insert profile into station 4 (see plate 12). For a door hung on the left insert profile into station 5. Once the profile is correctly located, firmly against the stop, depress the operating button and hold down until the profile has been punched. When punch completed, release button and withdraw the profile. The top arm name plate will be later fitted to the flat side of the profile and secured with 2 No. screws concealing this cutout.

Station 6 & 7 – 55mm stile, access for side load top arm

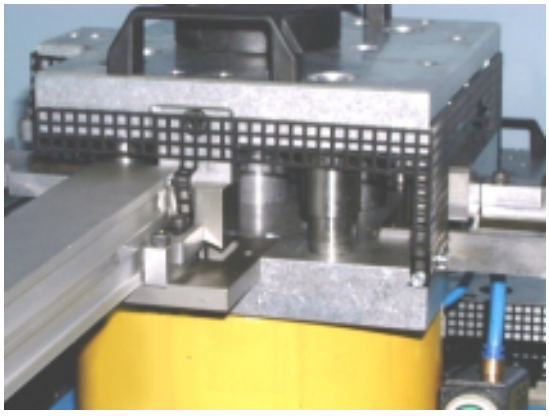


Plate 13. Right hand door in station 6.

With the gate already removed on Tool 4 the profile can be inserted into the punch tool. For a door hung on the right (viewed from inside) insert profile into station 6 (see plate 13). For a door hung on the left insert profile into station 7. Once the profile is correctly located firmly against the stop, depress the operating button and hold down until the profile has been punched. When the punch is completed, release button and withdraw the profile. The top arm name plate will be later fitted to the flat side of the profile and secured with 2 No. screws concealing this cutout.

Station 1 – Thresholds and header bar plate, flush bolt locking hole

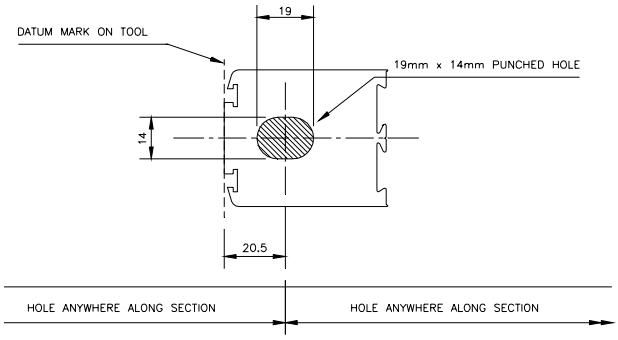


Fig. 2 Marking the hole position

Before this operation is carried out it is first necessary to mark the position of the hole on the profile to be punched. Take an imaginary datum in line with the door edge and mark a line on the threshold or cover plate 20.5mm towards the door. (see Fig 2.) This will now represent the centre line of the elongated slot which will allow for 2.5mm adjustment back and forth.

The next stage is to fit the correct die set corresponding with the profiles to be punched. The punch tool will be suppliied with 1 die set fitted and 3 others packed seperately.

- For profiles ref. CS15 and CS45 use die set 181521
- For profiles ref. CS315 and CS345 use die set 181524
- For profile ref. CS348 use die set 181527
- For profile ref. CS68 use die set 181518

Each die set is easily changed over by following the procedure below.

On a suitable clean work bench turn the punch tool over to expose the base. Remove the 2 No. Socket head screws with a 5mm Allen key. With the screws removed turn the punch tool back onto its base. Lift the die set clear of the 2 locating dowels and slide forward clear of the tool. The required die set can then be fitted in reverse sequence. **Note: Screws must be tightened securely.** Check guard fixing screws and tighten using a 3mm Allen key if necessary.

Door Profile Punch Tool – Com7-Tool3

Station 1 – Drained threshold

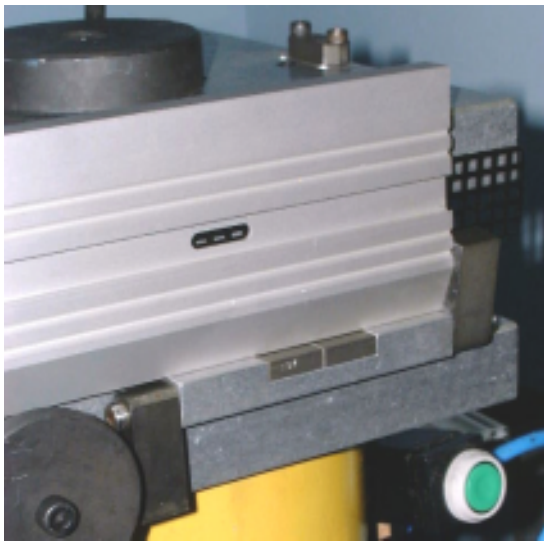


Plate 14. Punching drainage slots to the front of the pre-slotted threshold.

25mm x 5mm drainage slots can be punched 50mm in from each end of the drained threshold ref. CS315, CS345, CS347 and CS348.

With the front edge of the threshold profile facing down offer the profile up to the punch tool and locate above the die set. Use the stops provided to ensure the end slots are correctly positioned (see plate 14). Alternatively raise both stops and position the profile where the slot is required. The line on the die set denotes the centre line of the slot.

Once in position depress the operating button and hold down until the profile has been punched. When the punch is completed, release the button and withdraw the profile from the front.

Station 2 – Thresholds, pivot locating holes.

Firstly determine the correct die set for the thresholds required.

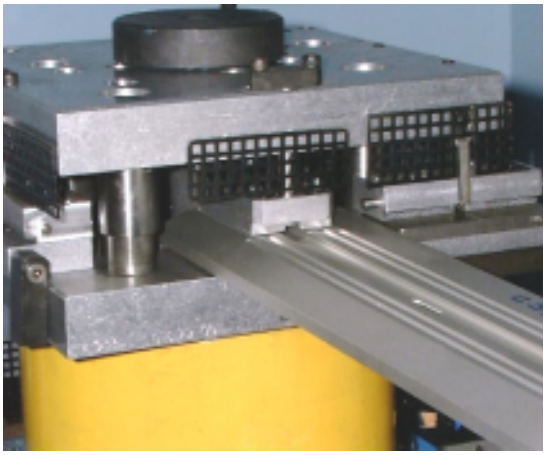


Plate 15. Punching drained threshold for pivot fixing holes.

- For standard double or single ramp thresholds ref. CS15 & CS45 fit the base plate (108) and die part (139).
- For drained thresholds and double square thresholds ref. CS315, CS345 & CS715 fit the base plate (106) and die part (138)

Each die set is easily changed over by following the procedure below.

The die set can be changed with the tool on or off of the press. Remember to remove locking collar if the tool is on the press. Looking from the top of the tool to the rear of the punch locking cap (part 111) you will see 2 access holes. With a long reach, 5mm Allen key remove the " socket head screws from the die set base plate. With these screws removed the die set can be withdrawn from the punch tool. It is un-necessary to remove the punches. Check guard fixing screws and tighten using a 3mm Allen key if necessary. The required die set can then be fitted in reverse sequence. **Note: Screws must be tightened securely.**

Once the correct die set is fitted determine if 65mm or 70mm pivot point is required. A stop bar is located to the right hand side of the die set. For 65mm pivot point turn the stop bar anticlockwise and for 70mm turn clockwise. Insert profile into the punch tool, (see plate 15), once in position depress the operating button and hold down until the profile has been punched. When the punch is completed, release the button and withdraw the profile from the punch tool.

Station 3 – Drained Sub Sill.

For a 6mm square cut out 50mm from the end of the profile use the left or right hand stops as required (see plate 16). If cutouts are required along the length of the profile, place both stops in the down position and use the scribed centre line for correct positioning of the cut out.

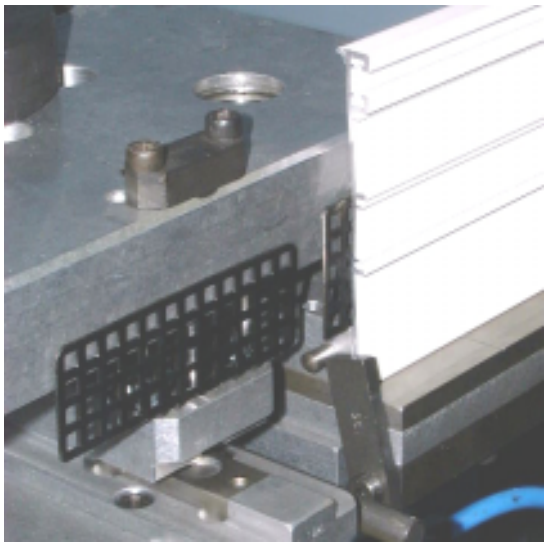


Plate 16. Drainage slot to sub sill

Once in position depress the operating button and hold down until the profile has been punched. When the punch is completed, release the button and withdraw the profile from the front of the punch tool or slide along for the next punch.

Station 4 – Header bar cover plate fixing holes

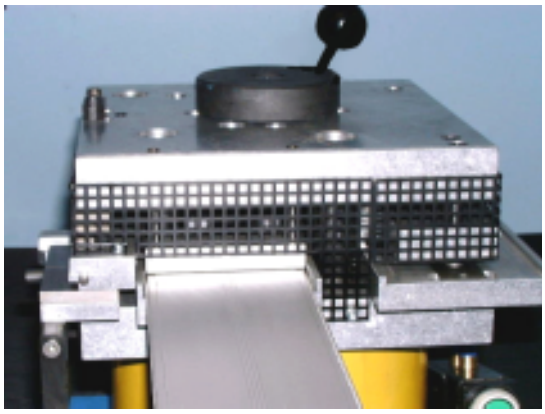


Plate 17. Punching 2 holes at 84mm centres, 14mm in from the end of the profile.

Insert the profile CS68 into the punch tool, with the woolpile carriers face down, (see plate 17), until the profile reaches the back stop. Once in position depress the operating button and hold down until the profile has been punched. When the punch is completed, release the button and withdraw the profile from the punch tool. These 2 holes can now be countersunk for M4 fixings.

Station 5 – Cover plate, transom closer access holes

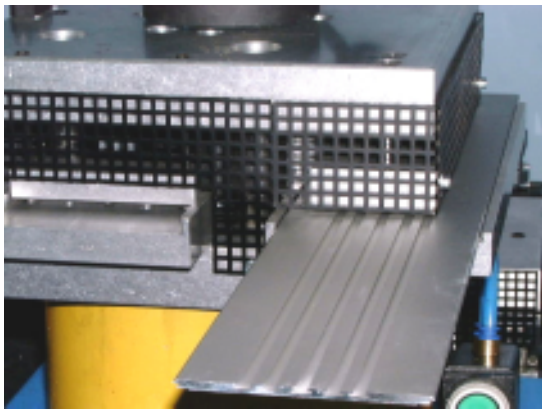


Plate 18. Insert profile into the punch with the dovetails facing up.

Take the profile, already prepared on station 4 and insert woolpile into the correct dovetails. This is not absolutely necessary but it is easier at this stage as punching the large hole could crimp the edges of the dovetail. Set the end stop for 65mm or 70mm pivot points and insert the profile with the dovetails facing up (see plates 18 & 19).

Once in position depress the operating button and hold down until the profile has been punched. When the punch is completed, release the button and slide the profile out from the punch tool.

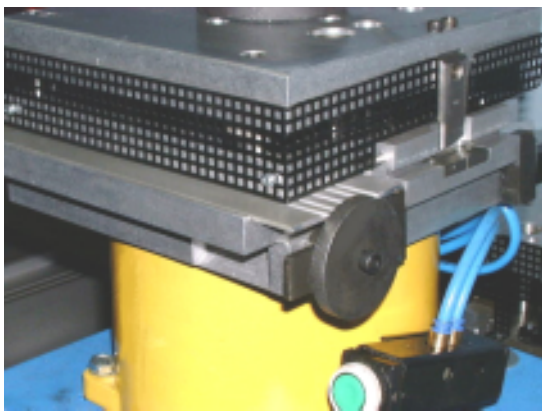
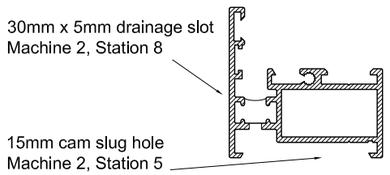
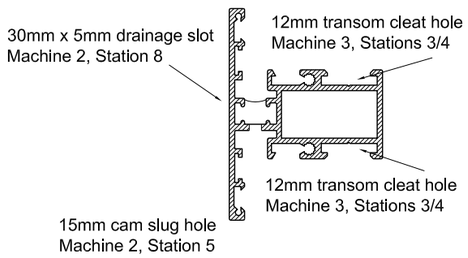


Plate 19. Use the back stop to select 65mm or 70mm pivot points.

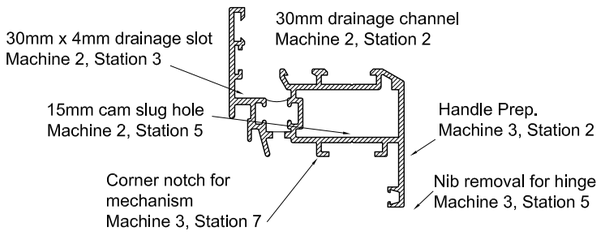
CS231
FIXED LIGHT/OUTER FRAME (T.B)



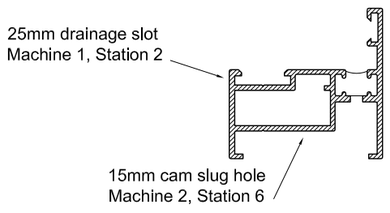
CS232
TRANSOM/MULLION (T.B)



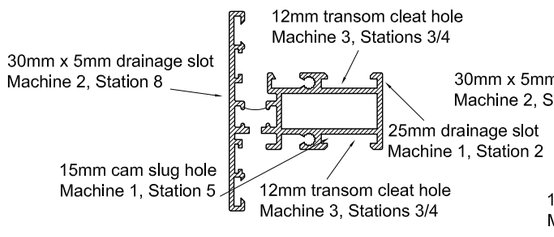
CS233
TILT/TURN SASH (T.B)



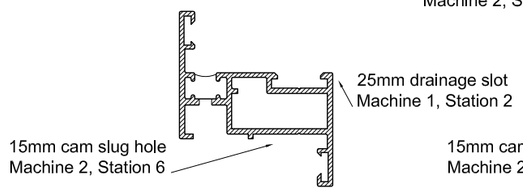
CS234
FIXED LIGHT/OUTER FRAME (T.B)



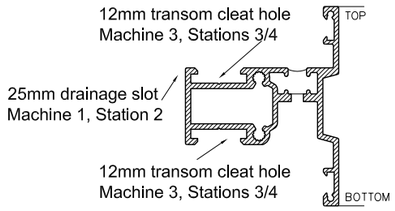
CS235
TRANSOM/MULLION/SASH (T.B)



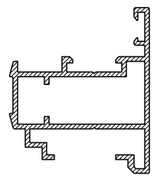
CS236
FIXED/OPENING SASH (T.B)



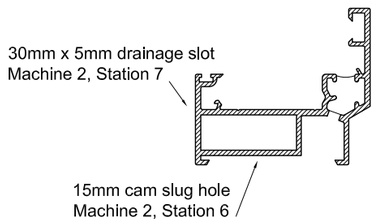
CS239
TRANSOM/MULLION (T.B)



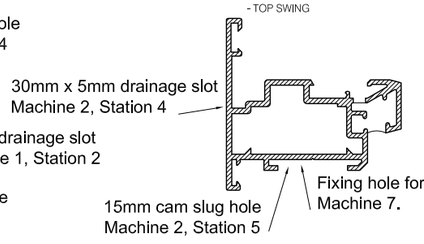
CS220
PIVOT TRANSFER



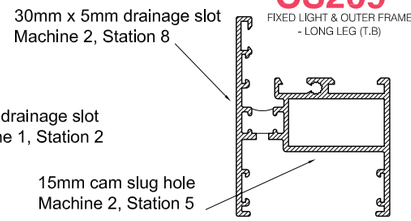
CS237
OUTER CASEMENT FRAME (T.B)
- TOP SWING



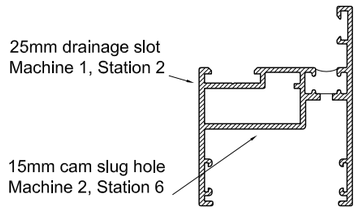
CS238
CASEMENT VENT (T.B)
- TOP SWING



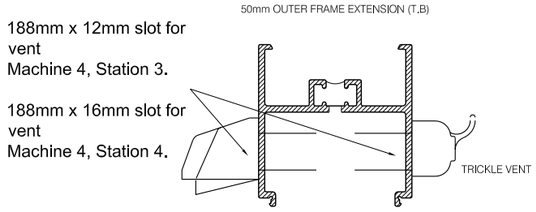
CS209
FIXED LIGHT & OUTER FRAME
- LONG LEG (T.B)



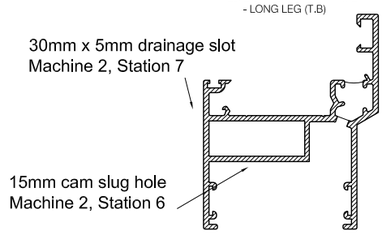
CS210
FIXED LIGHT & OUTER FRAME
- LONG LEG (T.B)



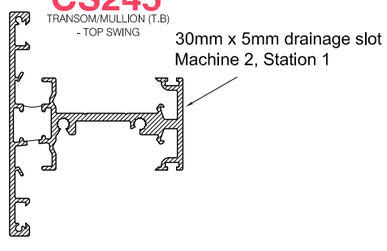
CS251
50mm OUTER FRAME EXTENSION (T.B)



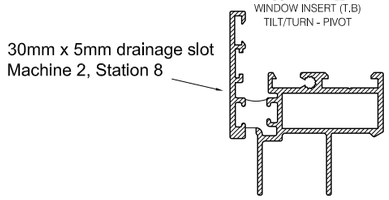
CS297
FIXED LIGHT & OUTER FRAME
- LONG LEG (T.B)



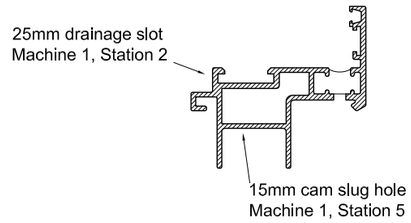
CS245
TRANSOM/MULLION (T.B)
- TOP SWING



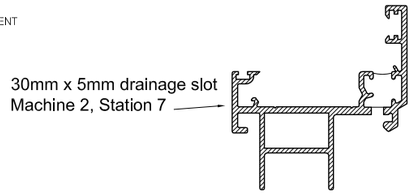
CS212
CURTAIN WALL
WINDOW INSERT (T.B)
TILT/TURN - PIVOT



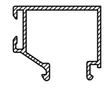
CS213
CURTAIN WALL
WINDOW INSERT (T.B)
OPEN OUT VENT



CS214
CURTAIN WALL
WINDOW INSERT (T.B)
TOP SWING REVERSIBLE



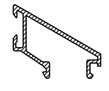
CS226
GLAZING BEAD
4mm – 12mm



CS227
GLAZING BEAD
20mm – 28mm

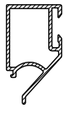
CS228
GLAZING BEAD
28mm – 36mm

CS229
GLAZING BEAD
4mm – 12mm

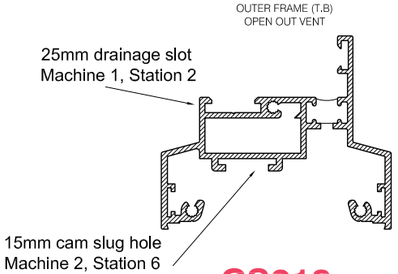


CS230
GLAZING BEAD
20mm – 28mm

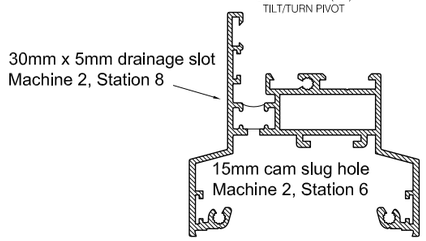
CS249
GLAZING BEAD
20mm – 26mm



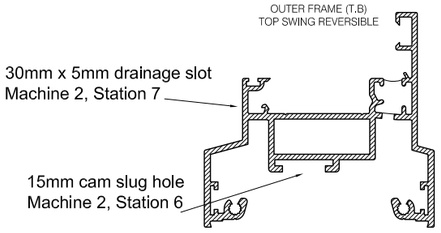
CS217
DIRECT FIXED
OUTER FRAME (T.B)
OPEN OUT VENT



CS218
DIRECT FIXED
OUTER FRAME (T.B)
TILT/TURN PIVOT



CS219
DIRECT FIXED
OUTER FRAME (T.B)
TOP SWING REVERSIBLE



Bead Notching

Machine 3, Station 1 - Machine 4, Station 3 - Machine 4, Station 1

COMAR ARCHITECTURAL ALUMINIUM SYSTEMS
COMAR 5

50mm WINDOW SYSTEM TOOTLING (SHEET 1 OF 1)

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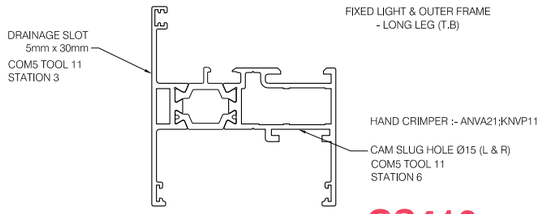
Web Site: http://www.comar-alu.co.uk

SCALE	1 : 2	SHEET	A3
DATE APP	01/08/99		
DRG. NO.	8.3		

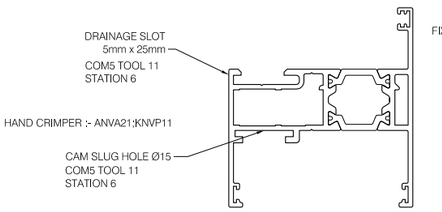
CS409

FIXED LIGHT & OUTER FRAME
- LONG LEG (T.B)



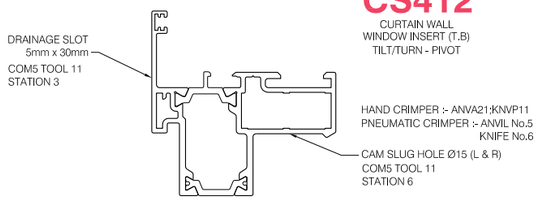
CS410

FIXED LIGHT & OUTER FRAME
- LONG LEG (T.B)



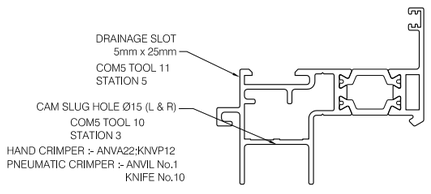
CS412

CURTAIN WALL
WINDOW INSERT (T.B)
TILT/TURN - PIVOT



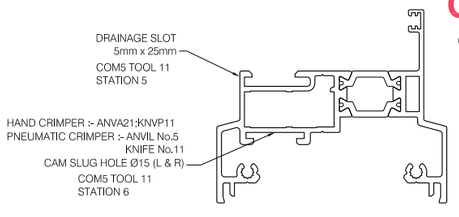
CS413

CURTAIN WALL
WINDOW INSERT (T.B)
OPEN OUT VENT



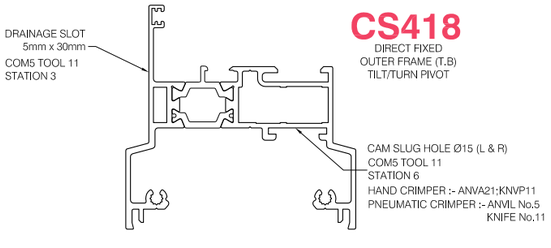
CS417

DIRECT FIXED
OUTER FRAME (T.B)
OPEN OUT VENT



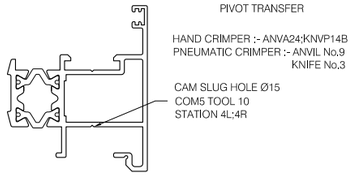
CS418

DIRECT FIXED
OUTER FRAME (T.B)
TILT/TURN PIVOT



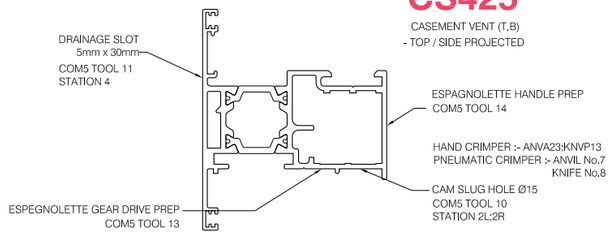
CS420

PIVOT TRANSFER



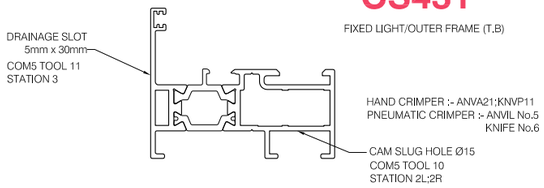
CS425

CASEMENT VENT (T.B)
- TOP / SIDE PROJECTED



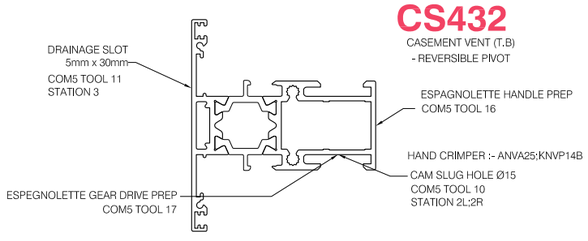
CS431

FIXED LIGHT/OUTER FRAME (T.B)



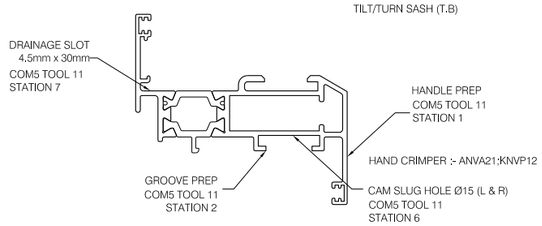
CS432

CASEMENT VENT (T.B)
- REVERSIBLE PIVOT



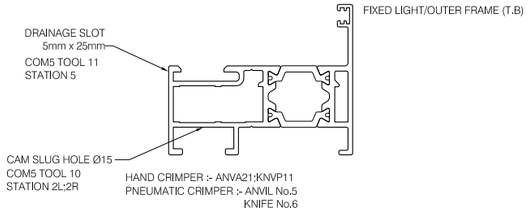
CS433

TILT/TURN SASH (T.B)



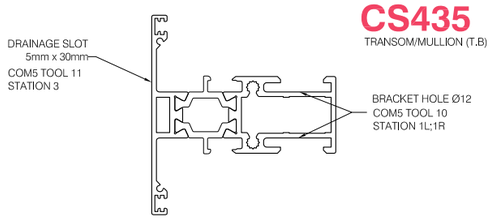
CS434

FIXED LIGHT/OUTER FRAME (T.B)



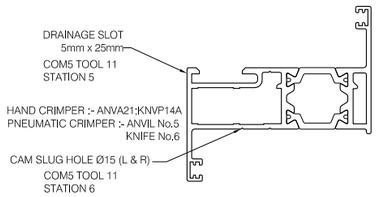
CS435

TRANSOM/MULLION (T.B)



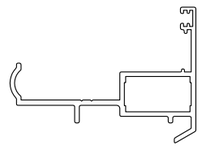
CS436

FIXED/OPENING SASH (T.B)



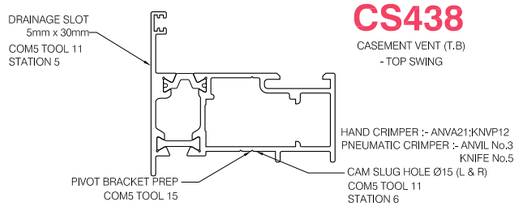
CS437

OUTER CASEMENT FRAME
- TOP SWING



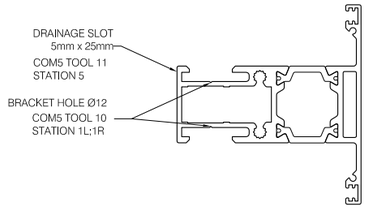
CS438

CASEMENT VENT (T.B)
- TOP SWING



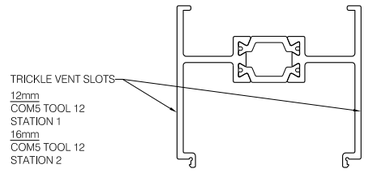
CS439

TRANSOM/MULLION (T.B)



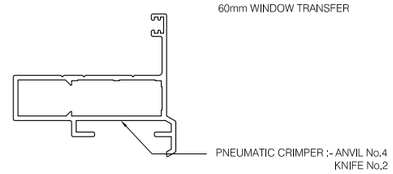
CS451

60mm OUTER FRAME EXTENSION (T.B)

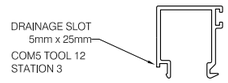


CS463

60mm WINDOW TRANSFER



CS423



CS424

CS428

CS430

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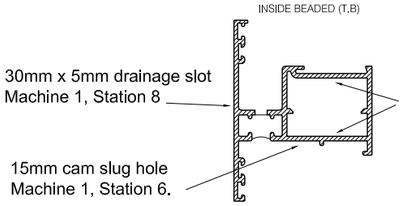
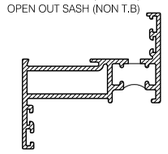
SCALE	1 : 1	SHEET	A1
DATE APP	29/03/04		
DRG. NO.	8.5		

CS532
HEAVY DUTY SASH
INSIDE BEADED (T.B)

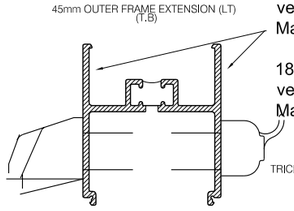


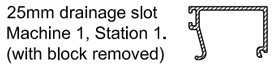
CS536
OPEN OUT SASH (T.B)
ODD LEG OUTER (NON T.B)
OPEN OUT SASH (NON T.B)



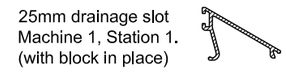
OPERATIONS AS CS537

CS551
45mm OUTER FRAME EXTENSION (LT)
(T.B)

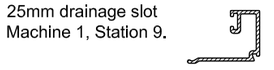




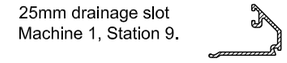
CS526
SINGLE GLAZING BEAD
(SQUARE)



CS529
SINGLE GLAZING BEAD
(SLOPING)

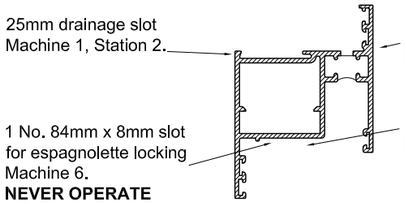


CS527
DOUBLE GLAZING BEAD
(SQUARE)

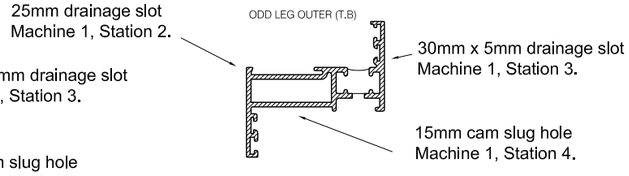


CS530
DOUBLE GLAZING BEAD
(SLOPING)

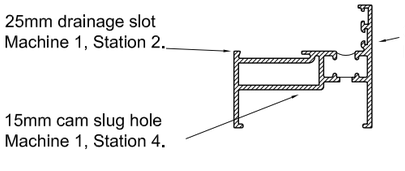
CS533
HEAVY DUTY SASH
(OUTSIDE BEADED)



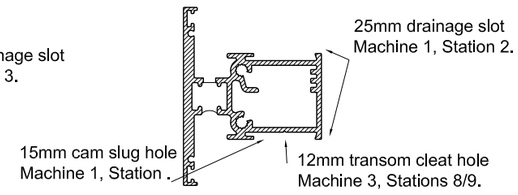
CS537
ODD LEG OUTER (T.B)



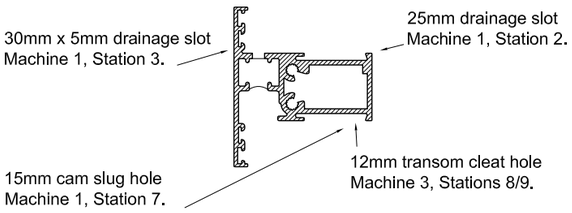
CS534
FIXED LIGHT/OUTER FRAME (T.B)



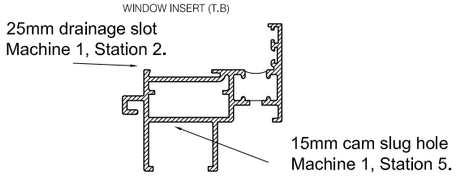
CS539
TRANSOM/MULLION
HEAVY DUTY (T.B)



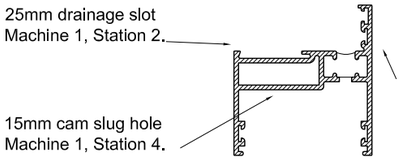
CS535
TRANSOM/MULLION/SASH (T.B)



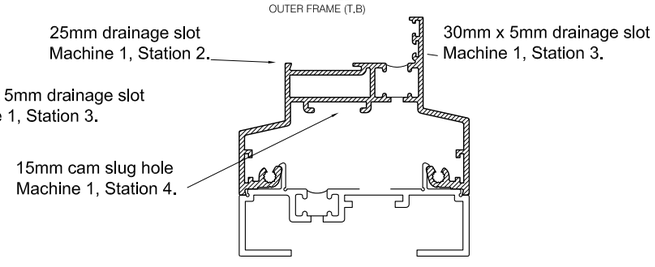
CS513
CURTAIN WALL
WINDOW INSERT (T.B)



CS510
FIXED LIGHT AND OUTER FRAME
LONG LEG (T.B)
LONG LEG (NON T.B)



CS544
DIRECT FIXED
OUTER FRAME (T.B)



IMPORTANT NOTES

1. MACHINES SHOULD BE CONNECTED TO A PRESSURE OF BETWEEN 7 AND 8 BAR
2. ENSURE WATER TRAPS ARE DRAINED REGULARLY
3. MACHINES ARE DESIGNED FOR SINGLE USER ONLY
4. KEEP TOOLS WELL LUBRICATED AND FREE FROM SPENT MATERIAL
5. ENSURE ONLY THE PROFILE TO BE PUNCHED IS INSERTED INTO THE MACHINE BEFORE OPERATING THE LEVER
6. AIR MUST BE CONNECTED BEFORE INSERTING THE PROFILE
7. AIR MUST BE DISCONNECTED BEFORE CARRYING OUT ANY MAINTENANCE OR INVESTIGATION

SAFETY IS THE RESPONSIBILITY OF A COMPETENT OPERATOR WHO SHOULD HAVE SUFFICIENT TRAINING BEFORE OPERATING THE MACHINES

COMAR
ARCHITECTURAL
ALUMINIUM SYSTEMS

COMAR ARCHITECTURAL ALUMINIUM SYSTEMS

COMAR 5 — **45mm WINDOW SYSTEM TOOLING** — **(SHEET 1 OF 1)**

B.S. 5750 / ISO 9000
REGISTERED FIRM

A Member of the Parkside group

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SCALE	1 : 2	SHEET	A3
DATE APP	01 / 12 / 01		
DRG. NO.	5.3		